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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,428	05/10/2005	Jeffrey Keller Teumer	50393/004001	5032

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EXAMINER	
GOUGH, TIFFANY MAUREEN	
ART UNIT	PAPER NUMBER
1657	

NOTIFICATION DATE	DELIVERY MODE
10/14/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentadministrator@clarkelbing.com

Office Action Summary	Application No.	Applicant(s)	
	10/534,428	TEUMER ET AL.	
	Examiner	Art Unit	
	TIFFANY M. GOUGH	1657	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 July 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,7-21 and 29-50* is/are pending in the application.

4a) Of the above claim(s) *34-50* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,7-21 and 29-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/3/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant's response and IDS filed 07/03/2008 has been received and entered into the case. Claims 1, 7-21, 29-50 are pending. Claims 34-50 are withdrawn. Claims 1, 7-21, 29-33 have been considered on the merits. All arguments and amendments have been considered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 7-21,29-33 are/stand rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/74164 in view of Kishimoto et al (Genes and Dev., 2000, p.1181-'85) and WO 99/01034 supported by Zhu et al. in further view of WO 00/69449.

WO '164 teaches a method comprising culturing dermal papilla (DP) cells with cells expressing Wnt proteins to promote hair growth. The culturing of DP cells with Wnt maintains hair inductivity (p.1, lines 17-19). The Wnt expressing cells can be autologous or allogeneic to the DP cells (p.3, lines 11-17). The method comprises culturing DP cells to increase the number of DP cells, i.e. three or more passages (p.14, lines 1-2,26-28, p.23, lines 1-14) and then harvesting and returning the cells (p.14, lines 15-23). They also teach that the cells can be autologous or allogeneic (p. 3, lines 11-13).

Kishimoto et al (Genes and Dev., 2000, p.1181-'85) teach Wnt signaling effects on DP cells when the cells were exposed to cells expressing Wnts 3a,4,5a, 7a. They show that the hair inductive activity of DP cells is maintained in culture by Wnt signaling and that exogenous Wnt would extent hair cycle and promote hair growth (p.1184 col. 1).

Zhu et al demonstrate that prostate epithelial cells do express Wnt genes (abstract and Fig. 1A). Fig. 1A, lane 1 clearly shows expression of most all genes in the Wnt gene family, including Wnt 4,5,7,11.

Although, WO '164 teaches co-culture of DP cells with Wnt expressing cells either in a conditioned medium or by co-culture with cells producing the Wnt proteins, they do not teach a medium conditioned with prostate epithelial cells. However, it is well known in the art that conditioned mediums can be used in cell culture. Support is provided by WO '034 which discloses a method for producing new hair growth comprising culturing human dermal papilla cells in a conditioned medium. They show

that co-cultivation allows rat papilla cells to retain their hair inducing capabilities through 56 passages (p.2, lines 7-10). WO'034 disclose that the human papilla cells cultured in a conditioned medium can expand rapidly for many passages in vitro while maintaining their hair inducing properties (p.2,1ines 27-29). The cells used in the conditioned medium may be autologous or allogenic in source (p.4, lines 10-22). After culturing the papilla cells in the conditioned media, the papilla cells are then harvested and can be used directly or centrifuged, i.e. concentrated (p.5, lines 1-4). Although, WO'034 does not specifically teach the number of passages of the dermal papilla cells, they do teach that the cells can expand for many passages and further teach the ability of rat cells under the same conditions to retain their hair inducing properties through 56 passages. Thus, it would be obvious to one of ordinary skill in the art at the time the invention was made to cultivate dermal papilla cells in a conditioned medium with cells of non-epidermal origin and expect success in maintaining the hair inducing properties through passages of more than seven.

Therefore, at the time of the claimed invention, it would have been obvious to one of ordinary skill in the art to condition a medium with prostate epithelial cells being used in a method for cultivating hair inductive cells, i.e. DP cells because the art teaches a method of cultivating DP cells in a conditioned medium. Further, WO'164 and Kishimoto, teach that Wnt signaling and co-culturing DP cells with cells expressing Wnt clearly maintains and promotes hair growth and hair inductivity. While they do not teach prostate epithelial cells specifically, these cells are known the express Wnt, as is evidenced by Zhu who show expression of nearly all 19 Wnt genes. Therefore, given

that prostate epithelial cells are known to express many Wnt proteins, it would have been obvious to one of ordinary skill in the art to culture DP cells in a medium conditioned with prostate epithelial cells known to promote hair inductive potential of the DP cells.

Moreover, at the time of the claimed invention, one of ordinary skill in the art would have been motivated to culture DP cells in a medium conditioned with prostate epithelial cells with a reasonable expectation for successfully cultivating hair inductive cells because it is known in the art that Wnt levels positively regulate the ability of dermal papilla cells to promote hair growth and culturing DP cells with Wnt expressing cells maintains hair inductivity. Further, prostate epithelial cells are known to express Wnt genes as taught by WO'164 and Zhu.

Further, the above references do not teach the conditioned medium to be obtained by using a cell line derived from a donor that has been screened for risks factors associated with transplantation, to be free of viral vectors, serum free, or frozen prior to use.

WO '449 disclose conditioned cell culture medium compositions and their methods of use. The medium may be conditioned with any eukaryotic cell type (p.5,1ines 30-34) including human hair papilla cells (p.45,1ines 34),epithelial cells, (p.5,1ines 32-35,p.8,1ines 8-12,p.9 lines 31-35) from corresponding tissues including genitourinary tract, i.e. encompassing the prostate (p. 12,lines 13-20). Cell lines may also be used in the conditioned medium but are carefully screened for human and animal pathogens, i.e tested for risk factors associated with transplantation (see p.

14,lines 6-10). The medium may contain, but does not require the addition of additional growth factors and proteins, i.e, consisting essentially of the conditioned medium (p. 13, lines 8-12) and is serum-free (p. 11, lines 4-7). The medium may be in any form such as liquid, frozen, lypholized, or dried (p.6,1ines 18-20). The compositions are used to culture cells and further is formulated for methods of stimulating hair growth (p.7, lines 18-31). The conditioned medium is also concentrated by any methods known in the art (p.29,1ines 1-9, p.46 lines 2-3).

Therefore, at the time of the claimed invention, it would have been obvious to one of ordinary skill in the art to use a medium conditioned with prostate epithelial cells in a method for cultivating hair inductive cells, i.e. DP cells because WO'449 teaches a method of cultivating DP cells in a conditioned medium which uses cell lines, screening for risk factors associated with transplantation, free of viral vectors, frozen and concentrated prior to use, which is serum free. They teach that the conditioned medium may be comprised of any known or unknown medium and may be conditioned using any eukaryotic cell type. They teach that the medium may be frozen, lyophilized, concentrated and may be used for topical applications. The use of conditioned cell mediums is well known in the art of cell culture. These mediums contain cellular metabolites, secreted proteins etc. from cells. Therefore, it would have been obvious to one of ordinary skill in the art to have used a conditioned medium in a method of cultivating DP cells because these mediums are known to be useful in cell culture because they contain cellular metabolites, secreted proteins etc. from the cells and cell-lines used in the medium. Further, given that prostate epithelial cells express Wnt

proteins which are known in the art to be useful in promoting and maintaining hair inductive potential when cultured with DP cells, one would be motivated to use a conditioned medium containing prostate epithelial cells to cultivate hair inductive cells with a reasonable expectation of success in promoting and maintaining the hair inductive potential of the DP cells because Wnt levels positively regulate the ability of dermal papilla cells to promote hair growth.

Response to Arguments

Applicant's arguments filed 07/03/2008 have been fully considered but they are not persuasive. Applicant is correct in their arguments that state that the references to do not explicitly teach the use of prostate cells in a conditioned medium. In response to applicant's arguments that there is no motivation or teaching/suggestion to combine the elements of the claimed invention, applicant is advised that KSR forecloses the argument that a specific teaching, suggestion, or motivation is required to support a finding of obviousness. See the recent Board decision *Ex parte Smith*,--USPQ2d--,slip op at 20,(Bd. Pat. App & Interf. June 25, 2007) (citing *KSR*,82 USPQ2d at 1396) (available at http://www.uspto.gov/web/offices/dcom/bpai/prec/fd071925.pdf) . While applicant argues the specific Wnt proteins taught by Zhu, this argument is not commensurate in scope with the claimed invention. Applicant does not claim any specific Wnt proteins, much less **any** Wnt proteins at all.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon

hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Applicant argues that the art fails to teach or suggest that medium conditioned with **any** cell that expressed a Wnt polypeptide, when used to culture DP cells will suffice to promote or maintain hair-inducing activity. While this argument is not commensurate in scope with the claims, for argument sake, WO '164 does clearly teach and suggest culturing DP cells in a culture medium conditioned by the growth of Wnt producer cells or by co-culture with producer cells. Further support is provided by applicants disclosure, p.2, lines 15-18. While WO'164 does not explicitly teach prostate epithelial cells, the rejection was constructed based on what was known in the art at the time of the invention, i.e. that prostate epithelial cells do express Wnt proteins. Wnt proteins are known in the art to be useful in promoting or maintaining hair inductive potential of DP cells when co-cultured with Wnt expressing cells either in a conditioned medium or in co-culture. Therefore, given what was known in the art at the time of the claimed invention the Office's conclusion is proper.

Further, applicant argues that the art fails to teach or suggest that any and all cell types expressing Wnt polypeptides, much less all epithelial cells no matter the source, are capable of promoting the hair growth activity of hair inductive cells. Applicant argues that the art fails to teach or suggest any non-recombinant cells actually capable of

achieving this result. However, WO'164 clearly teaches "a cell which expresses a Wnt polypeptide", therefore, either recombinant or non-recombinant. Further, there is nothing of record, much less any teachings at all that support applicants assertion that a cell known to produce/express Wnt proteins would not be capable of achieving this result in a co-culture with hair inductive cells. Even further, the art teaches non-limiting sources of Wnt. Therefore, one of skill in the art would be reasonably apprised to seek Wnt from any reasonable/suitable source.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TIFFANY M. GOUGH whose telephone number is (571)272-0697. The examiner can normally be reached on M-F 8-5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jon Weber can be reached on 571-272-0925. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ralph Gitomer/
Primary Examiner, Art Unit 1657

/Tiffany M Gough/
Examiner, Art Unit 1657